2.2.4 Tree Report

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Our Ref: 12176_R06a_MB_MM
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Wingates Industrial Estate, Land at Great Bank Road, Bolton (Application No. 08439/20) – Update BS5837 Tree Survey, pursuant to Planning Conditions No. 19 and No. 28

1.1. This technical briefing note has been prepared by Tyler Grange Group Ltd on behalf of Panattoni UK Development Limited, to summarise the results of an update baseline tree survey, which is intended to partially discharge Condition No. 19 and fully discharge Condition No. 28 at the above-named development.

Planning Context

1.2. A hybrid planning application was submitted on 28th May 2020 (Planning Ref. 08439/20) and consented, with the following conditions which relate to arboriculture:

"Condition No. 19

Prior to the occupation of Unit 2, within Phase 1 hereby approved, a base line tree survey of the trees located within group G4 or G5 (as identified in the AIA on Tree Constraints Plan reference 12176/P02c) shall be undertaken and submitted to the Local Planning Authority for each phase of the development.

Three years after first occupation of Unit 2, a tree survey shall be submitted and approved in writing by the Local Planning Authority which assesses the impacts of the development on tree groups G4 and G5, in comparison to the baseline survey. If the survey(s) identifies that the development has resulted in adverse impacts or the loss of any trees within tree group G4 and G5 the submitted survey should be accompanied by an appropriate mitigation scheme in the form of replacement extra heavy standard tree planting. Any mitigation required shall be implemented within the next planting season of its approval.

Any trees and shrubs which form the mitigation scheme that die or are removed within five years of planting shall be replaced in the next available planting season with others of similar size and species.

Reason: To protect the health and appearance of the tree(s) and in order to comply with Bolton's Core Strategy policies CG1 and CG3."

"Condition No. 28

Prior to occupation of Unit 2, within Phase 1 of the development hereby approved, an updated tree survey shall be submitted to and approved in writing by the LPA:

i. showing that all trees proposed for retention within the site within Group G4 or G5 (as identified in the AIA on Tree Constraints Plan drawing number 12176/PO2c and Tree Retention and Removal Plan drawing number 12176/P03e) have not been impacted and have been retained;

ii. If trees which were identified as being retained on the approved Tree Retention and Removal Plan (drawing number 12176/P03e) have been removed from within Group G4 and G5 during construction of the approved development a scheme shall be submitted to and approved in writing by the Local Planning Authority which provides for replacement trees and shrubs planting to mitigate any loss within the application site. The approved mitigation scheme shall then be implemented in full and carried out within 6 months of the occupation of any of the buildings or the completion of the development, whichever is the sooner, or in accordance with phasing details included as part of the scheme approved by the Local Planning Authority. Any trees and shrubs that die or are removed within five years of planting shall be replaced in the next available planting season with others of similar size and species.

Reason: To protect the health and appearance of the tree(s) and in order to comply with Bolton's Core Strategy policies CG1 and CG3."

Development Proposals

1.3. The site has received planning permission for two phases, comprising:

1.4. Phase 1: Full planning permission for the erection of two storage and distribution warehouses (use classes B2/B8), ancillary offices (use class B1), landscaping and associated infrastructure.

1.5. Phase 2: Outline planning permission for up to 5,000 sqm [GEA] of storage and distribution development (use classes B2/B8) OR additional car parking spaces, with all matters reserved.

Update BS5837 Tree Survey

1.6. A pre-occupation update tree survey was undertaken by Tyler Grange Group LTD on Wednesday 16th June 2021. The tree survey was carried out in-line with British Standard BS5837:2012 'Trees in Relation to Design, Demolition and Construction', full methodology for which can be found at **Appendix 1.**

1.7. The Tree Protection Plan produced to accompany the Arboricultural Impact Assessment (TG Ref. 12176/R01d) and Arboricultural Method Statement (TG Ref. 12176/R03) was used as a basis for the update tree survey. A composite overlay of the tree constraints information, topographical survey, and development layout is illustrated on the **Updated Tree Protection Plan (12176/P09)** located to the rear of this report, which is to be read together with the updated **Tree Survey Schedule (TSS01b)** located at **Appendix 2.**

1.8. The updated Tree Protection Plan illustrates the tree quality gradings (in accordance with the Cascade Chart for Tree Quality Assessment, see **Appendix 3**), root protection areas (RPAs), and tree canopy spreads of retained trees, together with the tree protection measures currently in place. It is considered to reflect the arboricultural baseline of the site at the time of the update tree survey, which is to be used as a baseline for an update tree survey in three years' time, following occupation of the development.

Arboricultural Observations

1.9. Site photos are provided in **Appendix 4** to the rear of this report.

1.10. Trench excavation within the RPA of tree group G4 (for installation of sub-surface utilities and the new car parking curb) has been undertaken (see **photograph 3**). During the update tree survey the completed trench was inspected and exposed roots were identified (see **photograph 4**), however, all roots were found to be below 25mm in diameter, with an average of less than 15mm (see **photograph 5**). The minor extent of exposed roots observed during our visit suggests that no detrimental damage to the trees has occurred.

Conclusions

1.11. Tyler Grange Group LTD undertook an update BS5837 Tree Survey on Wednesday 16th June, the results of which are considered sufficient to discharge Condition No. 28 of the associated planning permission.

1.12. It is noted that in order to fully discharge Condition No. 19 a follow up site visit will be required, three years following occupation of Unit 2, to advise on any changes in condition or quantum of tree cover. Following this further tree survey work an accompanying mitigation strategy would be prepared, as required to address any identified post-occupation issues relating to the retained trees following the three-year occupation period.

Appendix 1: Survey Methodology and Report Limitations

Field Work

A1.1 In accordance BS5837, the tree survey included all trees within / in influence of the site and the site boundaries that were over 75mm diameter at breast height (1.5m).

A1.2 Measured topographical survey data (supplied by others) was used to inform tree locations their surrounding context. Any trees not identified on the topographical survey are prefixed with (*) and their locations have been approximated using measurements during the tree survey and further informed by aerial photography where required.

A1.3 The trees surveyed were visually inspected from ground level only. No invasive investigations or climbing inspections were necessary to confirm visual or audible signs of defect or debility and no tissue or soil samples were undertaken. For further clarification please refer to the tree survey explanatory notes in below.

Tree Numbers

'T' prefixes have been used to identify individual trees and commence with 'T1'.

'G' prefixes have been used to identify groups of trees.

'H' prefixes have been used to identify hedgerows.

'W' prefixes have been used to identify woodlands.

Species

A1.4 Species are listed by their common name, both in the schedule and in the report text.

Height and Stem Diameter

A1.5 The stem diameter is measured at 1.5m above ground level and given in millimetres (mm).

A1.6 Tree heights are measured in metres (m) using a clinometer where access and land typography allowed. In instances where access to tree's stem and height measurements were not possible, the dimensions have been estimated by eye.

Crown Spread and Height of Crown Clearance

A1.7 Radial crown spread is measured in metres and is listed for each of the four cardinal points where access has been possible to obtain a measurement. Where access was not possible to measure the spread of the canopy, such distances have been estimated by eye or informed by aerial photography.

A1.8 The measured canopy shapes have been plotted on the Tree Constraints Plan at the four cardinal points. For groups of trees, the extent of the canopy has been measured as an average across the group and plotted using the topographical survey mapping. In some instances, Tyler Grange will use aerial photography to inform the canopy spread of larger tree groups and woodlands where topographical data is limited for such features.

A1.9 The distance between the ground level and the first significant branch or radial tree crown, whichever is the lower, has been measured in metres.

Age Class

A1.10 The age of each tree is defined as follows:

Young - within the first third of reaching full maturity;

Semi-Mature - within the second third of reaching full maturity;

Early-Mature - within the last third of reaching full maturity;

Mature - specimen at full maturity; and

Veteran – tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Physiological and Structural Condition

A1.11 The physiological or structural condition of each tree is defined as either; good, fair, poor or dead. For each tree, where appropriate, notes on the structural integrity are provided on form, taper, forking habit, storm damage, decay, fungi, pests, etc.

A1.12 An assessment of a tree's physiological condition is defined as:

Good – fully functioning biological system showing expectant vitality for the species i.e. normal bud growth, leaf size, crown density and wound closure.

Fair – fully functioning biological system showing below average vitality i.e. reduced bud growth, smaller leaf size, lower crown density and reduced wound closure.

Poor – a biological system with limited functionality showing clear physiological decline, disease or significantly below average vitality i.e. limited bud growth, small and chlorotic leaves, low crown density and limited wound closure.

Dead – tree observed to fully dead with no living parts.

A1.13 An assessment of a tree's structural condition is defined as:

Good – no significant structural defects.

Fair – structural defects which could be alleviated through remedial tree surgery or arboricultural management practices**.**

Poor – structural defects which cannot be alleviated through tree surgery or arboricultural management practices.

Tree Quality Gradings

A1.14 The value of trees has been assessed in accordance with the BS5837 Cascade Chart for Tree Quality Assessment (See Appendix 4). Grading subcategories (1, 2 and 3) reflect arboricultural, landscape and cultural values, respectively.

Root Protection Area

A1.15 The Tree Constraints Plan shows the approximate extent of Root Protection Areas (RPAs). The RPAs have been plotted and calculated in accordance with the methodology set out in Appendices C and D of BS5837, using the tree stem diameter dimensions obtained during the site visit.

A1.16 Plotted RPAs serve as a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

A1.17 Where pre-existing site conditions or other factors indicate that rooting may occur asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution observed on-site. Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

a) the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and underground apparatus);
b) topography and drainage;
c) the soil type and structure;
d) the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition, and past management.

A1.18 The plotted RPAs have therefore informed the design of the proposed development where possible. While developing within RPAs should be avoided, special working methods can be adopted to alleviate the RPA disturbance for cases where the development is considered necessary and unavoidable.

Tree Canopies and Shading

A1.19 The distribution of tree canopy cover on and within influence of the site is illustrated on the TCP. Canopies have been plotted at cardinal points for individual and groups of trees.

A1.20 The Tree Survey Schedule included at Appendix 3 to the rear of this report lists the vertical clearance from site ground level to significant tree branching of individual trees. This measurement informs the impacts of accessibility and development beneath tree canopies. The principal tree shadow constraints are shown on the TCP and have been plotted in accordance with BS5837 using the current height of surveyed trees. The indicative shade cast by existing surveyed trees signifies the area within which the amenity interests of shading, available daylight and the proximity of trees to any future site uses may be impacted upon should a tree be retained as part of development.

A1.21 Where shading is unavoidable, the potential adverse impact of shadowing should also be reviewed on balance with the positive aspects of retaining a degree of canopy shade. BS5837:2012 (para. 5.3.4, a) NOTE 1) states that "shading can be desirable to reduce glare or excessive solar heating, or to provide comfort during hot weather. The combination of shading, wind speed/turbulence reduction and evapotranspiration effects of trees can be utilised in conjunction with the design of buildings and spaces to provide local microclimatic benefits".

Limitations

A1.22 The comments made are based on observable factors present at the time of inspection.

A1.23 Although the health and stability of trees in their current context is an integral part of their suitability for retention, it must be understood that this report is not a tree risk assessment and should not be construed as such. While every attempt has been made to provide a realistic and accurate assessment of the trees' condition at the time of inspection, it may have not been appropriate, or possible, to view all parts or all sides of every tree to fulfil the assessment criteria of a risk assessment.

A1.24 No tree can be considered entirely safe, given the possibility that exceptionally strong winds could damage or uproot even a mechanically 'perfect' specimen. It is therefore usually accepted that hazards are only recognisable from distinct defects or from other failure-prone characteristics of the tree or the site. An assessment of the potential influence of trees upon existing buildings or other structures resulting from the effects of trees upon shrinkable load-bearing soils or the effects of incremental root or branch growth, are specifically excluded from this report.

Un-assessable Risks

A1.25 Any alteration to the application site or development proposals could change the current circumstances and may invalidate this report and any recommendations made.

A1.26 The Wildlife and Countryside Act (WCA) 1981 (as amended) makes it an offence to disturb nesting birds or recklessly endanger a bat or its roost. Bats are also a European protected species and are additionally protected under the Conservation (Habitats & c) Regulations 1994 and 2010 (as amended). The survey findings, constraints, opportunities and design or mitigation recommendations included within that report must be read alongside this document.

A1.27 A lack of recommended work does not imply that a tree does not pose an unacceptable level of risk and likewise, it should not be implied that a tree will present an acceptable level of risk following the completion of any recommended work.

Appendix 2: Cascade Chart for Tree Quality Assessment

TREES FOR REMOVAL		
Category and Definition	**Criteria**	**Identification on Plan**
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety of other trees nearby or very low-quality trees suppressing adjacent trees of better quality. (NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve)	DARK RED

TREES TO BE CONSIDERED FOR RETENTION				
Category and Definition	**Criteria - Subcategories**			**Identification on Plan**
	1.Mainly Arboricultural Values	2. Mainly Landscape Values	3. Mainly Cultural Values, including Conservation	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural benefits.	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or temporary/transient landscape benefit.	Trees with no material conservation or other cultural value.	GREY

Appendix 3: Tree Survey Schedule TSS01b

Tree Number	Common Species Name	Height (m)	Trunk Diameter (mm)	Crown Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	BS5837 Category	Comments/Preliminary Management Recommendations	RPA Radius (m)	Root Protection Area (m2)
				N	E	S	W								
T2	Silver birch	6m	250	3.50	4.00	2.75	3.75	2.00	Semi mature	Fair	Fair	C1.2	Tree established within landscape buffer, set back from development behind new boundary fence. Could not previously be surveyed due to dense vegetation.	4.1	53
G1	Goat Willow, Silver Birch, Hazel	12m av.	2x 320 max. 150 av.	7.00 max.				0.00	Semi Mature to Early Mature	Poor to Fair	Poor to Fair	C1.2	Self-set group of trees established at boundary of site. Unmanaged low arboricultural value, provides limited visual screening to adjoining footpath. Structure is typical for species. Several ash trees are in poor condition, with one dead cherry noted. Ground clearance of several trees at the east boundary of the group is low due to the presence of several failed / storm damage limbs at groundlevel.	5.1	82
G2	Lawson Cypress	15m av.	200-400	3.00 av.				0.00	Mature	Good	Good	B2	Mature screening belt of trees established at boundary of site. Moderate value for visual screening.	4.8	72
G3	Goat Willow, Alder, Silver Birch	6m	12x 150 max. 150 av.	5.00 max.				0.00	Semi Mature to Mature	Fair	Fair	C1.2	Self-set trees established at boundary of site. Low value.	6.2	121
G4	Lawson Cypress, Alder, Scots Pine, Lombardy Poplar	15m	200-300	3.00 max.				0.00	Mature	Good	Good	B2	Mature screening belt of trees established at boundary of site. Moderate value for visual screening.	3.6	41
G5	Alder, Goat Willow, English Oak, Scots Pine	8m	200 max.	2.50 1.00 into site				2.50	Young to Early Mature	Fair	Fair	C1.2	Early mature boundary tree stock canopy encroaches into site over fenceline.	2.4	18

Tree Number	Common Species Name	Height (m)	Trunk Diameter (mm)	Crown Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	BS5837 Category	Comments/Preliminary Management Recommendations	RPA Radius (m)	Root Protection Area (m2)
				N	E	S	W								
G7	Goat Willow, Horse Chestnut, Lime, Hazel	9m max.	300 max. 150 av.	4.00 max.				2.00	Young to Semi Mature	Fair to Good	Fair to Good	C1.2	Young to early mature amenity tree belt established offsite adjacent to road. Structure is typical for species.	3.6	41
G9	Red cedar, White poplar, Silver birch, Goat willow.	15 av.	400 mav. 250 av.	4.00 av.				1.50	Young to Mature	Fair to Good	Fair to Good	B1.2	Offsite line of trees established within adjoining public park. Several trees are growing into existing site fence and are of varying structural condition. Overall moderate amenity value due to visual screening, however several individual trees are of lower arboricultural value.	3.0	28
G10	Hawthorn, English oak, field maple	3 av.	100	3.00 av.				0.00	Young	Fair	Fair	C1.2	Line of young shrubs and trees established at top of embankment. Could not be previously surveyed due to dense vegetation. Currently proposed to be retained despite consented removal due to concerns regarding embankment stability.	1.2	5
G11	Sycamore, horse chestnut, english oak	15m	450	6.00				3.00	Semi mature to Mature	Fair to Good	Fair to Good	B1.2	Mature trees established within tree belt G5, of moderate arboricultural value due to size and maturity. Stems not plotted on topographical survey and could not be surveyed previously due to dense vegetation.	5.4	92

Appendix 4: Photographs

Photograph 1: Tree Protection Fencing around Group G1.

Photograph 2: Tree Protection Fencing around Group G2.

Photograph 3: Excavation within RPAs of Group G4.

Photograph 4: Exposed Roots.

Photograph 5: Average Root Width (15mm).

Photograph 7: New Site Boundary Fence.

Photograph 8: Additional Shrubs and young Trees retained.

Plans:

12176/P02d – Pre-development Tree Constraints Plan

12176/P09 – Updated Tree Protection Plan

Key:

- Site Boundary
- Category B - Trees of Moderate Quality and Value
- Category C - Trees of Low Quality and Value
- Category U - Trees Recommended for Removal
- Approximate Extent of BS5837 Calculated Root Protection Areas (RPAs)
- BS 5837 Calculated Tree Shadow Constraints
- Dense Scrub and Self-set Young Trees with Stem Diameter >75mm

Project Name

Wingates Industrial Estate, Bolton

Drawing Title

Tree Constraints Plan

Tyler Grange

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Scale	Date
1:750 @ A1	18th November 2020
Drawn by	Checked by
MB	JJ

Drawing No.

12176/P02d

N

0m 10m 20m 30m 40m

Key:

- Site Boundary
- Category B - Trees of Moderate Quality and Value
- Category C - Trees of Low Quality and Value
- Approximate Extent of BS5837 Calculated Root Protection Areas (RPAs)
- BS 5837 Calculated Tree Shadow Constraints
- Tree Protection Barrier Locations

G9
G2
1x dead cherry
G1
Tree protection measures to be retained in-situ until a detailed method statement is produced as part of a reserved matters application, detailing tree retention and removal for the outline application area.
Outline Application Area
G8
G4 (stem locations plotted approximately)
5x low value silver birch and alder
G3
Perimeter fencing acting as a suitable in-situ protection for retained offsite trees..
Inaccessible, stem locations could not be plotted
G5
G10*
Additional low value shrubs and young hedgerow trees retained (could not be previously surveyed due to dense vegetation).
Newperimeter fencing acts as a suitable in-sit protection for retained offsite trees..
T2*
Additional retained silver birch, could not previously be surveyed due to dense vegetation.
G11*
Stem locations not plotted on topographical survey. Average mature tree stem diameter 450mm. Could not previously be surveyed due to dense vegetation.
Great Bank Road
Estate Spine Road
254 Parking Spaces (inc. 13 Accessible & 13no. ev charging spaces)
80 Parking Spaces (inc. 4 Accessible & 4no. ev spaces)
3 Storey Offices
Location for sprinkler tanks and pumphouse by tenant
Sports Court
Play Area
Unit 1
Unit 2
Hub
2 Level Access
11 docks @ 3x3m
16no. LGV parking @ 12.5x3m
7 level access doors @ 18x5m
13no. LGV parking @ 12.5x3m
28 no. HGV parking @ 17 x 3.5m
40 no. trailer spaces
12 Docks
level access
3 level access doors
Fire Tender Access
Emergency fire access only
Refuse store
Staff Entrance
Cycles
HGV/ LGV Driver Entrance
Exit gate 6m wide egress
Shelter
Extent of office above shown dashed
El Sub Sta
WB

Wingates Industrial Estate, Bolton

Drawing Title

Updated Tree Protection Plan

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Scale	Date
1:750 @ A1	24th June 2021
Drawn by	Checked by
MB	JP

Drawing No.

12176/P09

N

0m 10m 20m 30m 40m